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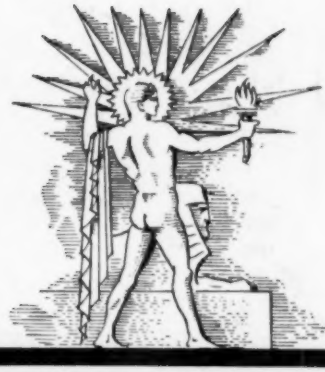
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



August 24, 1940

Restored Splendor

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A SCIENCE SERVICE PUBLICATION

Do You Know?

The first big *all-welded* cargo ship built in the United States was launched this summer.

A *non-skid* bathtub designed to lessen bathtub accidents has a serpentine embossed bottom.

Oil wells can be *drilled* thousands of feet in one direction and then continued in another direction.

A new dwarf summer apple tree, originating at South Dakota Experiment Station, is said to bear *fruit* the first or second year after planting.

In many parts of Africa the majority of male lions have no *manes*, and zoologists say that wild lions never have such fully developed manes as those in captivity.

Using *blood* from 100 volunteer donors, the University of Michigan Hospital will conduct tests of methods for making a national blood reserve for wartime purposes.

Cheaper than installing blinds is the German blackout of factory buildings achieved by orange illumination and windows painted in the complementary color, light-green.

Industries are being reminded that *protective* night lighting of a plant should be so arranged as to provide definite advantage to the property protected and to put a saboteur or criminal at a disadvantage.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

ARCHAEOLOGY

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PUBLIC HEALTH

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ZOOLOGY

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To stretch the cod-liver oil supply, British scientists have evolved formulae using *peanut* and other oils, vitaminized, as additions or substitutes.

For defense purposes, the United States would need at least twice as many *weather* specialists as it has now, to aid in military and naval operations.

A new long-time record for catching a tagged fish: a *scup* tagged in Massachusetts June 6, 1932 was caught eight years later, off New Jersey.

A government entomologist says that a female *housefly* may lay 2,700 eggs in a three-month lifetime, and may be a great-grandmother in two months.

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PHYSIOLOGY

Vitamins Promise Help In Struggle to Look Young

New Diet Ingredients Turn Gray Hair Black; Suggests Future World Without Gray Locks

SCIENCE is attempting to bring to a weary world the cheerful if still speculative prospect of a future without gray hair, no matter what worry and trouble men and women have to face in that future.

The hope of such a development lies in things in food that turn gray hair to black.

These things may be vitamins. They may be minerals. Or both. Latest discoveries are that pantothenic acid, recently synthesized vitamin, and the minerals, iron, copper and manganese, have anti-gray hair effects. The pantothenic acid discovery was made by Dr. Claus Unna, of the Merck Institute for Therapeutic Research at Rahway, N. J. The anti-gray hair effect of the minerals is reported by Dr. Alfred H. Free, Western Reserve School of Medicine, (*Proceedings, Society for Experimental Biology and Medicine,* June).

These newly discovered anti-gray hair food ingredients, like a previously discovered anti-gray hair vitamin of the B complex, apply to rats, not necessarily to men and women.

Daily doses of pantothenic acid, starting in infancy, kept black rats from turning gray, Dr. Unna found. Rats turning gray on a deficient diet had their hair color restored by doses of this vitamin acid. Dr. Paul Gyorgy, of Cleveland, has obtained the same results with pantothenic acid in rat experiments. Rats that do not get enough iron, copper and manganese also turn gray, Dr. Free reports. Feeding the minerals restores the hair color.

Scientists refuse to say publicly that any of these diet ingredients will cure or prevent gray hair in men and women, but rumor says they can.

The speculation and the rumors may come to nothing but they seem worth presenting because the discovery of something to remove gray hairs in a world such as we live in would be worth more than a new explosive.

According to the rumors, picked up in corridor conversations at scientific meetings, conversations starting "Don't quote me, but—," the anti-gray hair vitamin is being given to humans in carefully guarded experiments.

One relative of a well-known vitamin researcher is said to have grown a new crop of black hair on a previously bald head, by taking the anti-gray hair factor.

A lady scientist beginning to go gray is now said by her friends to have hair in a stage between gray and its natural color that suggests the gray is leaving. Without naming names, this scientist is in a position to have especially easy access to the anti-gray hair vitamin factor.

A number of men on the faculty of a university where much vitamin research is done are unofficially but authoritatively reported to be taking the anti-gray hair vitamin but the report does not specify with what results.

A young lady nutritionist started taking a potent concentrate of all the B vitamins, for health reasons. Her friends report that she not only has regained her health but that the color of her hair has been restored as well.

Vitamin manufacturers, strangely, have not promoted any anti-gray hair product. The reason, I am told, is that they are afraid of the idea because of continued reluctance by scientists to give any hint that the anti-gray hair vitamin could be useful to humans.

So many persons, however, are now taking vitamins, particularly the members of the vitamin B complex which includes the rat anti-gray hair vitamin, that the human experiments may be going on without benefit of scientific blessings. It is easy to speculate that as a result of all the public vitamin-taking there will be few if any gray-haired men and women in the future, even though population scientists tell us there will be more and more old people in the world of tomorrow.

The discovery about the anti-gray hair minerals is too recent for rumors to have started.

Speculating on pantothenic acid's possibilities, however, one scientist (not Dr. Unna) said that since it also is a vitamin and can be made synthetically, doctors can give large doses of it to humans for trial.

In support of the idea that the anti-gray hair food ingredients may prove

NEWCOMER'S WELCOME

Favorite among new arrivals at the National Zoological Park in Washington, D. C., is a young pigmy hippopotamus, brought back from Liberia by Dr. and Mrs. William M. Mann.

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applicable to men and women whose locks are fading are several facts. The rat, on which their effects were discovered, is used in diet experiments because he responds to foods so much like man does. A large part of our new knowledge of food and nutrition and vitamins for health was gained from rat experiments.

Skeptics may ask why, if certain food ingredients can prevent gray hair, so many men and women who follow a good diet nevertheless become gray. The answer to that, according to one scientist, who like the others refuses to be quoted, is that an excess amount of the anti-gray hair food ingredient might correct the condition even if lack of the food ingredient or vitamin was not the cause.

The explanation for this is that gray hair might be caused by cellular anoxemia, in other words a condition in which cells of the body are starved for oxygen to carry on their life functions. The cause of this oxygen starvation might not be vitamin lack. But vitamins might correct it. One of the B vitamins, B_1, for example, is known to help cells take up oxygen.

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GEOLOGY

Strange Reversible Currents Keep Ocean Canyons Clear

REVERSIBLE currents, changing direction every few hours, sweep in and out of deep submarine canyons off the southern California coast, it has been discovered by Prof. Francis P. Shepard, University of Illinois geologist now working at the Scripps Institution of Oceanography. These currents apparently do something to keep the canyons from filling up with sand and silt, but they are not strong enough to account for the cutting of the canyons themselves, Prof. Shepard believes.

Cause of the currents is still undetermined. They can hardly be tidal phenomena, for they reverse direction in anything from one to four hours, which has no discernible relation to tidal periodicity. Prof. Shepard conjectures that they may result from great oceanic eddies.

The canyon floors have been found to be practically free from mud where the canyon heads extend into the coast or near to the coast. On the other hand, muddy sediments at least ten feet in thickness have been discovered in canyons which terminate at a distance of a mile or more from the shore. This may indicate that the currents, weak as they are, are effective in the case of canyons which approach the coast. More likely, however, landslides along these canyons produce the effects.

The origin of these submarine canyons continues to be a puzzle. They have the same shape and arrangement as canyons cut by rivers on land. Rounded gravel has been dredged up out of some of them, to depths as great as 3,000 feet. This again suggests river action, for it is hardly likely that wave action would shape stones into rounded forms at that depth. Finally, some of the canyons have deltas, like those formed by rivers, at their outer ends.

The great depth at which some of the canyons have been found is one obstacle to ready acceptance of the theory of their formation by rivers on land and subsequent drowning in the sea. Regarding this, Prof. Shepard says:

"It is interesting to note that canyons are found off all sorts of coast quite regardless of the type of rock, of the violence of storms, width of continental shelf, etc. Nor do they show any relation to areas where the coasts are known to be unstable. This suggests but by no means proves that the sea level has been changing.

"However, the canyons extend so deep that it seems certain that if they are river-cut that there must have been more than sea level changes to account for them. My guess at present is that there have been a combination of processes of which sea level change due to much larger polar ice caps than have been normally supposed is the major contributing factor. Sea level changes of 2,000 to 3,000 feet may set up great strains in the earth's crust due to redistribution of weight and these strains may have caused emergence of the continental borders to a considerable degree. However, other factors no doubt combined to produce the curious submarine features."

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Children need the most food for their size when *babies* and when in their teens, nutritionists point out.

ENTOMOLOGY

Australian Ant Is Friend of Farmers

BERATED as pests though ants universally are, one species at least, the greenhead ant of Australia, has been proved to be decidedly the farmer's friend. Prof. H. B. Fell of the University of Edinburgh has reported on studies he made of a number of colonies of this ant during a recent visit in the southern continent.

The greenhead ant, unlike many other kinds of ants, is not a scavenger, but a hunter, preferring to catch his meat "on the hoof." A single colony, comprising only a few hundred individuals, was observed by Prof. Fell to bring in the following bag of game during one working day of 11 hours: 125 larvae of beetles, moths and flies, 22 small spiders and their kin, 16 termites, 14 flies, 7 small moths, 6 ichneumon flies and 5 red ants.

The food of the colony, on a percentage basis, ran as high as 77.5 per cent. of beetle, moth and fly larvae. One colony, Prof. Fell estimates, will destroy more than 45,000 harmful grubs in the course of a year.

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ENTOMOLOGY

Chinch Bugs Stopped By Paper Barriers

DEFENSE lines made of mere paper served Midwestern farmers better than concrete and steel served France, in this summer's battle with the uncountable hordes of chinch bugs that have been menacing the corn crop. Surveys of the situation by scientists of the U. S. Department of Agriculture indicate that the bugs have been licked.

In some parts of the Corn Belt the defenses consisted simply of an earth ditch and ridge, with a line of creosote poured along the crest of the ridge. More effective, however, was a four-inch strip of building paper, soaked in creosote, and half buried in the soil, leaving a two-inch wall to oppose the crawling masses of insects. This was the method favored in Iowa, where the outbreak has been worst.

The Bureau of Entomology and Plant Quarantine, in cooperation with State officials, distributed nearly two and one-half million gallons of creosote during the present season. Of this, more than half was used in Iowa.

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ENGINEERING

Successful "Dirt" Roads Now Made With Cement

New Method Promises Vast Improvement in Network Of Feeder Roads That Bring Farm Products to Market

MOTORING around the country, you soon may be riding on a "dirt" road made with cement. Already, in 29 different states, sections of this new type of road have been installed, using a method of construction which engineers thought impossible only a few years ago. But research has solved the problem, and now the dirt-cement mixture promises to be widely used on "feeder roads," over which the farmer reaches the main highway with his products.

These roads are by far the most numerous. Some 340,000 miles of main roads permit travel between all parts of the country. Carrying heavy traffic, they require substantial construction and this has justified an average cost of between $20,000 and $40,000 per mile. The feeder roads carry a much lighter burden of traffic, but they add up to about 2,660,000 miles.

Concrete, made by mixing portland cement with either gravel or crushed stone, sand and water, is the preferred material for the main roads, and even some of the more heavily used secondary ones. But a cost of $15,000 per mile or more is too much for the farm-to-market field.

About $5,000 per mile, highway engineers found, was the maximum that could be justified. Yet it cost about twice this figure even to haul in enough gravel or crushed stone to lay it on the road as a thin blanket. Mixing it with cement to make concrete ran up the cost still more.

With the cost of hauling in the material so great it was obvious that this could not be done, if the costs were to be kept down. And if no material could be brought in, only that available locally could be used.

"How about mixing the cement with the soil of the old roadway?" it was asked. Almost unanimous was the opinion that it could not be done. For years, specifications for making concrete had prohibited use of material containing more than 5% of dirt. Some engineers, and laymen, had tried to make concrete with earth, but these attempts had mostly been unsuccessful.

However, some experiments in South Carolina in 1933 and 1934 indicated that possibly, under some conditions, it might work. Under the direction of Frank T. Sheets, then director of the Development Department of the Portland Cement Association, and Miles D. Catton, a member of the department, studies were conducted.

When a soil-cement road is to be made, then, the first step is to take samples of the soil, and to test them. These tests show the proportions to be used, and then the construction gang begins work.

Beginning of actual construction is to "scarify" or scratch the old road to a depth of about six inches, with a rake-like device hauled by a tractor. Then the material is powdered, and this is best done with a disk harrow, like that used on many a farm.

Next, the predetermined amount of portland cement is spread evenly over the surface, and mixed with the powdered earth. Here again farm machinery plays its part. The disk harrows, heavy duty field cultivators, or gang plows serve admirably.

Now comes the adding of water. This is sprayed under pressure, and, of course, the amount must be carefully controlled. Once more the harrow, plow or cultivator goes to work to mix it all very thoroughly. Then the surface is packed down, graded and rolled, but still it is not quite ready for use. Too rapid drying is objectionable, so the road is covered either with straw or earth, which is kept damp for about a week. Then it is opened to traffic, though about a month is required before it "seasons." After that, if it should not be quite smooth enough, a thin asphalt layer can be applied to give the proper riding surface, though this is not necessary as a protection for the road.

The first road to be made this way, in Johnsonville, S. C., is still in good condition after exposure to five winters. In 29 states and Alaska, more than 300 miles have been constructed or contracted for since the first one was made.

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A Yellowstone National Park ranger and his wife have been adopted by four *skunks*—and by being careful not to step on the little friends or otherwise anger them, the household has got along very well, with the reward that there isn't a mouse on the place any more.

DISKING THE ROAD

Important implement in the new method of surfacing tributary roads is this familiar farm tool. It powders the soil, mixes it with cement, later on works in the water.

INDUSTRY

American Industry's M-Day

Swift Mobilization of Workers as Important For Defense as Interchangeable Parts in Machines

By MARJORIE VAN DE WATER

AMERICA'S defense program demands the swift conversion of the machinery of peace into weapons for guarding the nation's safety.

Just as important is the speedy transfer and mobilization of trained workers without whom the machines alone are useless junk.

Standardization, interchangeable parts, mass production made possible America's industrial supremacy. The kind of tools developed for making the family automobile and the farm tractor can now be used to turn out huge quantities of airplanes and tanks. Chemicals, fabrics and processes developed for commerce will serve the nation in arming for defense.

De-specialization Now Needed

But modern industry forced the American worker to specialize. Now the demand on him is for adaptability, interchange, flexibility. If he has trained on an assembly line to fit a certain nut into place, he must now learn to use this skill on other parts of new machines in new industries.

More urgent than the fitting together of the metal parts for airplanes, guns, tanks and battleships, is the best placement of each human mind and hand where manpower must be effectively applied. Each misdirection will involve tragic loss and delay through friction, time waste, and inefficiency.

A thorough assay and utilization of America's most precious resource, her manpower, is a tremendous job requiring all the advice and service that science can give.

If the National Defense Advisory Commission follows the cue of those who prepared America for the World War, they will mobilize all the best brains of the psychological, psychiatric and teaching professions to work with labor and personnel experts on this great job of placement and training.

Thousands of men are already taking training to fill essential places in national defense industries. Are they being placed where their abilities will be put to the greatest possible use?

Fortunately, we are not as unprepared in this field as we were in 1918. We have techniques already developed for sorting out men according to their natural abilities and skills. Much of the research fundamental to any intelligent transfer of workers from one occupation to another has already been done and is awaiting use.

With completion of our census, more will be known about America's human resources than ever was known before. We know now how many are illiterate. We will know the age and sex of our people, what their economic status is, how many are employed in skilled jobs in industry, how many have had military service, how many have completed grade school, high school or college.

First to be included in the national defense industrial program will probably be the great army of the unemployed. And it is on the 5,500,000 applicants already registered at Uncle Sam's employment offices that the most complete information is available.

In the research division of the employment service studies of the greatest immediate value have already been made. These findings of years of patient research have now been put to work in organizing the great defense program.

While this is the time for swift action, for immediate application of scientific discoveries and developments, this is no time to abandon research in this field. Only by eternally seeking new knowledge can democracy be kept at the peak of its functioning.

What Is a Gandy-Dancer?

Did you ever hear of a gandy-dancer, a hot-stuff man, a bull runner, a frog-leg assembler or a vamper (no, not feminine)?

These are all workers in American industry—in construction, bakery, foundry, automobile and shoe work.

Each could fit into an important place in America's great program of national defense. Agencies charged with putting America back to work in a united defense effort face the problem of finding out just what these workers and those on some 55,000 other jobs can do in the Army or in essential industries.

Fortunately, the essential key to the puzzle exists.

It is the *Dictionary of Occupational Titles* developed after years of study by the U. S. Employment Service. Much more than a compilation of odd words, it provides a means by which the job names in various industries can be translated into a common language. It is the first step toward an interchange of workers comparable to that interchange of mechanical parts without which mass production would be hopeless.

Each industry has developed its own names for its own jobs. Many of these workers are duplicated in other industries under other names. Yet the same name may apply to very different jobs in different industries.

Several Kinds of Peelers

A "peeler" has the most famous of all jobs in the Army when he is put on K.P. with the potatoes. But a peeler in the amusement industry is a strip-tease artist. In a sawmill, a peeler takes the bark off logs and may also be called, believe it or not, a "spudder."

A frog farmer actually raises frogs for food, but a frog-leg assembler works on the inside of automobile doors. A bull runner is a pourer in a foundry. A gandy-dancer is a trackman in the construction industry. A hot-stuff man, also known as a shake-out man, is the fellow who dumps hot pans in a bakery. A vamper stitches together the uppers of shoes.

The Dictionary makes it possible for the outsider to list the jobs in any industry or at least to read the list understandingly. Anyone can buy it from the U. S. Government Printing Office. The first volume containing all the definitions costs $2.

A coding system worked out in the second volume makes it possible for an expert to go through any plant and put every single worker on a punch card like those used by the Census so that an immediate count can be made by machine of all types of workers in demand.

But most important of the Dictionary's functions is as a tool for the intelligent transfer of a worker in one industry to another job for which his experience fits him.

The hot-stuff man may not find any job of that name in the airplane industry or the machine shop, but his experi-

ence in skilful work with scorching hot metal pans would be very useful in a large number of occupations.

The Dictionary describes each job and codes it. Thousands of the cards punched by this code and representing all America's great behind-the-lines army of industrial workers can be speeded through a mechanical sorting machine. This will sort out all the workers who, like the hot-stuff man, have worked with hot metal. And this sorting can be used in many other ways—to pick out all who have worked on electrical wiring, or internal combustion motors, or with blueprints.

Thus the hot-stuff man is released from the confines of the bakery to serve wherever need is greatest.

Vital to any sort of selective training and service plan, either compulsory or voluntary, is knowledge of what it takes to do these many jobs essential to defense and who is qualified to learn that sort of work.

An important attack on the first essential—job analyses—has already been launched by Uncle Sam's employment service. Not interested in motion studies or "efficiency," these experts have obtained the cooperation of industry and labor, have gone into plants and shops, talked with workers, and watched them at work. They have found out just what a worker does, what tools he must handle, what conditions he must work under, what sort of promotion he is fitting himself for.

Ten Industries Studied

Such intimate studies of men on the job have been completed now for ten industries. They are: Cleaning, dyeing and pressing, construction, hotels and restaurants, job foundries, job machine shops, laundry, lumber and lumber products, retail trade, cotton textiles, and automobiles. Detailed job descriptions for the thousands of different jobs in these industries have been published and will be invaluable in putting any selective training system into action.

A glance at one of these job descriptions will give you an idea of how it would work. You may think of the hotel and restaurant industry as employing mainly maids and waitresses. But somewhere in the background there is also an electrician.

The hotel electrician, according to Uncle Sam's experts:

"Tests, repairs, and maintains in good condition electrical equipment, fixtures and appliances, refrigerating and air conditioning systems, elevators, and fire alarm, light, service, and power systems; installs conduits for new wiring; may maintain the internal telephone system; makes written or oral reports to management on trouble calls received and their disposition. Worker must be a qualified journeyman (licensed) inside wireman, having sufficient experience and knowledge to locate electrical troubles quickly and to perform all classes of inside electrical work in accordance with municipal regulations and code requirements."

That is the job summary. The description goes on to list the equipment and material with which he works from voltmeters to generator brushes; the hazards of his job, from electric shocks to falls from ladders, the relation of his job to others in the industry; and the qualifications necessary before he could be employed.

It is easy to see how important all this sort of information is to an agency mobilizing workers for defense who might need this electrician badly but who might otherwise never think of looking for him in the hotel business.

In the kitchen, the jobs run the gamut from executive chef to pot washer. The pot washer and vegetable man hold beginners' jobs and need no previous experience. But they must be able to work in a hot room, humid from escaping steam. They must know how to avoid the hazards of scalding water and steam. These abilities would be useful in many other places.

When the doughboy of 1918 was called up to serve his country, his particular niche in the Army was based partly on answers to the famous oral trade tests.

The young American who wants to serve the nation in defense in 1940 may be asked some of those very same questions.

America's new streamlined "Trade Questions," developed by Uncle Sam's employment service, include some of those same questions which served their purpose so excellently 22 years ago.

But they include many new queries based on occupations and processes not even known two decades ago. They are described in a new book, *Occupational Counseling Techniques*, by Dr. William H. Stead, Dr. Carroll L. Shartle and their associates at the Employment Service.

They are not arm-chair questions thought up by some theorist who never looked at the job. As the job analyst of the employment service went through plants and watched men at work, they assembled bit by bit information from which the questions could be formed. It was the exclusive, intimate sort of "inside dope" about a job that you cannot

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MANIPULATION TEST

Mrs. R. B. Robinson is taking a test given to applicants for jobs who apply at many of the Government's Employment Offices. This test is designed to test the hand dexterity of the applicant. It is known as the manipulation test.

METEOROLOGY

Storms That Harmed South Brought Good to North

THE TWO tropical storms that struck the Gulf Coast and the Southeast in mid-August, spreading destruction and distress, proved blessings in disguise to the country farther north. As they worked up the map they dissipated most of their violence but kept their load of moisture. Contacting colder air masses of polar origin, they poured out abundant rain, effectually ending the drought that had been troubling the Corn Belt.

In places, to be sure, the rains were excessive. Des Moines, Iowa, tried to put on an imitation of Pago Pago, with 3.24 inches of precipitation in one 24-hour period. However, for the most part the rains were merely heavy to moderate, not cloudbursts.

Even out toward the Great Plains there was drought-relieving rain. Some of the corn was already past help when the relief came, but a great deal of good was done to what remained, as well as in refreshing pastures and filling depleted wells and ponds.

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INDUSTRY

Glass Replaces Tin in German Food Industries

WITH their tin supply cut off by blockade, German manufacturers have had to turn to many substitutes for tin cans. Glass is being widely used; so extensively, in fact, that the glass container industry is unable to supply all of the demand even though working at full capacity. This information has reached the Bureau of Foreign and Domestic Commerce of the Department of Commerce, from the American Consulate General at Frankfort-on-Main.

Even prior to the outbreak of war, the Bureau is advised, "it was necessary to institute extensive measures of economy and substitution in the use of packaging materials and during the war these measures have become greatly intensified. Germany's packaging-material problem arises from the fact that, to a high degree, the nation is dependent upon foreign sources for the requisite raw materials—wood, wood pulp, tin plate, jute and other fibers, etc. The leading packaging materials obtainable from domestic sources are glass and plastics, and so great is the demand for substitute containers made of these materials that the producing companies are now taxed to the utmost capacity."

In addition to glass for tin plate, other substitutes are of paper for jute sacks, paper for wood, and impregnated cardboard for metal sheet. Old containers are being carefully salvaged and used again, but this is made difficult by the shortage of railroad rolling stock, and the restrictions on automobiles, so that transport charges for empty containers are high.

Another substitute for tin plate is sheet metal covered by a film of synthetic resin. Collapsible tubes are being made of plastics, at the rate of a million monthly. Additional savings have been effected by dispensing altogether with packing for some materials, such as soap; by using cheaper rather than more expensive type of paper and by prohibiting the use of cartons and outside containers for products already in paper wrappers.

Science News Letter, August 24, 1940

BOTANY—CHEMISTRY

War May Stimulate Birch Oil Industry

WAR may bring new prosperity to one of the oldest and most picturesque of America's woodland industries, now languishing in the trough of low prices. This is the distilling of birch oil, which smells like wintergreen and is used in disinfectants, drugs, insect powders, candies and chewing gum. It sells at $2.25 to $2.75 a pound nowadays, but during the first World War it brought as much as $10 to $15 a pound.

As described by Edward Ritter of the U. S. Forest Service, a birch oil still consists of a box-like vat, about six feet on a side, tightly built of wood, lined (or at least floored) with copper sheeting. It sits on a brick firebox roofed over with iron.

It is filled up with bundles of sweet-birch twigs once a day, and the bottom then covered with about a foot of water. The steam carries the birch oil out of the bark, and is condensed by means of a copper worm running through a trough of cold water. The oil is heavier than water, and sinks to the bottom of the collecting jars.

It takes two men to run a still, and at present prices just about returns a living wage. "Rev'nooers" do not mind this kind of still, but forestry men don't like to have them about, because of the fire risk.

Science News Letter, August 24, 1940

IN SCIENCE

ENTOMOLOGY

More Than 5000 Spiders Collected for Museum

SPIDERS—more than 5,000 of them—constitute the unusual collection brought back to the American Museum of Natural History by one of its curators, Dr. W. J. Gertsch, who recently returned from a 3,000-mile trip through Utah and Arizona. Much of the collecting was done on mountain heights above 8,000 feet.

"There is every reason to believe," said Dr. Gertsch, "that the collection will reveal many new species and several genera of spiders heretofore found only in Mexico."

Although the much-feared black widow spider is supposed to be abundant in part of the territory traversed, Dr. Gertsch found relatively few of them. He had better luck with tarantulas, capturing quantities of them. Tarantula reputations, he declares, are worse than their bites.

Science News Letter, August 24, 1940

ARCHAEOLOGY

Early American Implements Resemble Old World Work

DISCOVERY of 7,000 crude stone tools made by unidentified American aborigines, who used the same techniques as Europe's Stone Age people of half a million years ago, is reported by Dr. E. B. Renaud of the University of Denver.

Dr. Renaud found the rough chopping and scraping implements during his archaeological survey of the High Plains in Wyoming. European archaeologists, to whom he has sent samples of the American stone work, agree that the work is strikingly like early stone industry of Europe's Old Stone Age. Dr. Renaud emphasizes that he has no evidence yet as to age of the American finds, and no reason to think they are as old as Europe's Old Stone Age. The bulk of the collection was obtained on the surface at three sites in a terraced river valley.

Science News Letter, August 24, 1940

NCE FIELDS

BOTANY

Seashore Plant May Yield Insect Poison

DEVIL'S shoestring, a seashore plant of the southern United States, is being investigated by U. S. Department of Agriculture scientists as a possible source of the insect-killing drug, rotenone. At present, about half of the necessary supply is imported from the war-menaced Netherlands East Indies, the rest from northern South America.

In the *American Journal of Botany*, a four-man research team in the Department report that they have found the rotenone content of devil's shoestring roots to be highest at the time of blossoming. They have also found that individual plants differ in their potency, indicating distinct possibilities in selecting and breeding for cultivation.

The research was conducted by Drs. A. F. Sievers, M. S. Lowman, G. A. Russell and W. N. Sullivan.

Science News Letter, August 24, 1940

PUBLIC HEALTH

250,000 Child Cripples Recorded by States

NEARLY 250,000 crippled children—a pathetic army of victims of infantile paralysis, burns, rickets, and other crippling misfortunes—are now doing their bit toward helping themselves and other cripples by having their cases recorded on State registers, latest figures issued by the U. S. Children's Bureau reveal.

Over 99,000 crippled children were added to State registers last year, a rapid net gain of 77,000 toward the goal of recording facts about all crippled children of the country. The total of such children is believed to be about half a million. Among the young cripples removed from the registers last year as having reached 21 years, or for other reasons, were 7,000 reported cured.

While the State registers were established originally by State agencies helping crippled children under the Social Security Act, the recording of all crippled children, not merely those given State aid, is urged. Medical diagnoses and other facts thus recorded, are pronounced by the Children's Bureau highly valuable in attacking this large problem.

Most numerous among child cripples are found to be infantile paralysis victims, analysis of 188,579 cases on the registers shows. Over 36,000, or 19%, owed crippling to infantile paralysis; 19,000 had spastic paralysis; 14,000, clubfoot; 11,000, the bone infection known as osteomyelitis; while others suffered from burns, tuberculosis of bones or joints, harelip or cleft palate, rickets, and other troubles.

Science News Letter, August 24, 1940

ENGINEERING

Engineers Warn Against Schools That Advertise

SO-CALLED schools of refrigeration and air conditioning, which attract students with glowing promises of jobs in an uncrowded field, do not give proper training for this work. This is the consensus of a poll of opinion conducted among the profession by *Refrigerating Engineering* (August). Of 51 replies to a letter of inquiry, only five cases of actual hiring of such graduates were mentioned, and only two of these were successful.

A letter from Chicago says: "These abbreviated courses, I think, can only be helpful where the student already has employment in the industry and is already grounded in the fundamentals; but it is too bad to have clerks, barbers, chauffeurs, etc., lured by flowery and exaggerated claims and promises in the school's advertising into thinking a position with good pay awaits them upon receipt of their diploma."

From Canton, Ohio, comes the comment: "We could get all we wanted here to act as helpers without pay simply to get more experience. There have been enough graduates turned out today to double man the refrigeration and air conditioning industry throughout the country, yet the schools are still grinding away."

Another correspondent, in Boston, remarks: "In our opinion the various air conditioning schools may substantiate their claims, if a student has had enough practical field experience and desires to obtain the technical side, but when they agree to make a competent engineer of a novice in six easy lessons, their claims are grossly exaggerated."

Science News Letter, August 24, 1940

ZOOLOGY

Polar Bear Liver Made Museum Collectors Sick

IF YOU shoot a polar bear (it's nice to think of doing that, anyway, these August days) don't eat his liver. It's poisonous.

Kenneth Doutt, zoologist of the Carnegie Museum, Pittsburgh, tells of the unpleasant experience he and a group of fellow scientists had after a feast of polar bear liver garnished with onions (*Journal of Mammalogy*, August).

One member of the party had shot two polar bears. It was suggested that a meal of polar bear steaks would be nice, but the bears had not yet been skinned. The party decided to compromise on fried liver. Everybody ate heartily, including the crew of the chartered boat. The meat tasted slightly soapy at first, but after that it seemed delicious.

Everything went well until about one o'clock in the morning, when Mr. Doutt awoke, ill with a dull headache. Then he suddenly remembered reading explorers' tales of polar bear liver being poisonous.

He debated whether to awaken the rest of the party, but decided not to: "As I had never heard of a death from the effects of polar bear liver, I decided that to wake the others and tell them they had been poisoned might be worse than the poison itself."

Next morning, however, the entire party were sick, with violent headaches, nausea, dizziness and torpor. It was two or three days before everybody again felt normal.

Science News Letter, August 24, 1940

PSYCHOLOGY

Imaginary Weight Lifting Affects Muscle Potentials

YOU MAY never see a dream—walking. But Dr. William A. Shaw has measured an imagination—lifting. He tells, in a new work, *Archives of Psychology*, of tapping, with electric oscillograph and amplifier, electric potentials in the arm (which accompany muscular activity) during the real and imagined lifting of weights. Not only is there muscular activity in your arm when you imagine lifting a weight, but the amount of activity keeps pace with the vividness of your imagination. And the lifting of a heavy weight, in your imagination, is accompanied by more activity than is the imaginary lifting of a lighter weight.

Science News Letter, August 24, 1940

QUALIFYING FOR JOBS

This group is taking a clerical test at the D. C. Employment Center in Washington, D. C. Tremendous amounts of "paper-work" in all industrial programs require whole armies of trained white-collar workers.

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obtain from reading. It comes from first-hand contact.

Then when the questions had been framed, they were studied by skilled workmen and foremen who criticized them and made suggestions. Other workmen answered the questions. In this last group were men with different degrees of skill from expert to apprentice. Even workers in a different but related occupation were represented. From this sieving were saved the questions which were judged to be fair and revealing and which served to differentiate clearly the skilled workers from those unacquainted with the job.

One sort of question requires a definition, but is informally worded as a workman himself might put the question: "What do you mean by building up a lead (pronounced leed)?" The bricklayer who knows his mortar will not think that this has something to do with publicity for a movie star; he will know that it means building up a section of wall. The carpenter will know that a "shore" refers to an upright brace, not to a place to go swimming.

Another type of question asks for most common methods or the best, largest, most, least, heaviest in a process. The machinist, for example, should know, when using a straddle mill cutter, what is the smallest number of cuts necessary to mill a six-sided nut.

Questions also deal with use, procedures (what do you do to ——?), location, names, purposes (of tools, machines) numbers (how many? how often?). Thus an air-compressor operator must know what to use to clean the regulator. The bricklayer must be able to tell what you do to the outside of a manhole. The asbestos worker must be able to locate where the seam is run in stitching canvas covering over pipes. The blade-grader operator should know what you call the part of the roadway extending from the edge of the pavement to the inside of the ditch. The machinist must know why you do not give the tool a rake in turning brass. And the machinist must know the number of jaws in a universal chuck.

These questions are aimed to measure only the sort of information a man picks up at work on his job. They have nothing to do with his general intelligence. They are not a direct measure of his skill. And they would be useless to show whether an untrained boy has the ability to learn a particular job.

Tests for these skills and aptitudes, however, have been developed and may be used in selection in connection with the defense program. Aptitude tests are ready for 50 occupations—tests of skills for six.

Science News Letter, August 24, 1940

Boulder Dam expects more than a half-million *visitors* this year.

ARCHAEOLOGY—CHEMISTRY

Photochemistry Restores Beautiful Ancient Gloss

See Front Cover

A GLOSSY finish that was the pride of Persian craftsmen 2,500 years ago has been applied to a plaster cast of an ancient lion's head sculpture by a few minutes of photographic "developing" at the University of Chicago. The process was used by Herbert P. Burtch of the University's famous Oriental Institute.

The Institute received from its Persepolis expedition fragmentary stone scraps of lions' heads. Pieced together, the fragments formed a magnificent snarling head in a plaster cast, the archaeologists found, but the cast was a dull, light color, instead of the original shining black of the effigy in ancient Persia.

Confronted with the problem of restoring the original gleam to the head, Mr. Burtch, after some experiments, hit upon the photographic process. The plaster cast was treated with silver nitrate, applied with a brush. Then it was "exposed" like a photographic plate or film, under a strong, even light.

The "bathing" process presented a difficulty, since the surface could not be touched without spoiling the appearance, but it was necessary to slosh the cast in water. A set of clamps and a metal standard provided the necessary purchase, but it took two men to "bathe" the head.

Application of developer with a brush was a final step, and the result was a hard, glossy black, as pleasing as the stone original seen by the Persians two and one-half millenniums ago.

Science News Letter, August 24, 1940

NUTRITION

Milk For Babies Crucial In Europe's Food Problem

American Red Cross Waiting Possible Arrangements To Ship Vital Supplies Through Britain's Blockade

PROVIDING milk for small children to drink is a major worry in Europe's food dilemma.

The American Red Cross, taking note of the plea of the French government at Vichy, that milk for children is the most urgent relief need, is awaiting arrangements that would make it possible to ship supplies through British blockade.

Two trainloads of food for children purchased in Switzerland by Red Cross officials have recently gone to Paris and Vichy. The trainload to Vichy, which included quantities of condensed milk and dried milk and other baby foods, reached there in July and had already been distributed in unoccupied France when the Petain government's plea for more was issued. The trainload destined for children in German-occupied France, in Paris and vicinity only, arrived Aug. 7.

Relief officials in Europe have sent word that they would like milk shipments to run approximately 70% condensed milk, 20% unsweetened evaporated milk; and 10% powdered milk.

The Red Cross relief ship McKeesport succeeded in getting 15,000 cases of canned evaporated milk and 200 cases of baby food to unoccupied France in July and also 1,800 cases of molasses and 400 cases of dark corn syrup, useful in baby feeding formulas.

Nutritionists estimate that one case of this evaporated milk would provide one child with a fair ration of milk for two months. This would be at the rate of drinking nearly a pint and a half a day.

To England, American Red Cross shipments recently sent or booked include 44,000 cases of evaporated milk, and 25,000 pounds of dried milk. It is estimated that 500,000 people are evacuated from their homes in Great Britain, and Britain is sheltering 100,000 refugees from other countries.

No comprehensive figures reveal the fate of dairy herds in European countries. In the United Kingdom dairy cattle have been increased as a wartime food measure, and dairy farmers have been given priority in use of feed. Yet reports this summer have indicated that milk production has been falling off, probably the result of short rations for cattle.

Denmark, whose dairy herds are noted for milk production, is recently reported as making ready to ship 10,000 live cattle to Germany. Denmark, like other invaded countries, is hard pressed to feed its herds. Slaughter of cattle is believed to be large in Europe this summer. In the World War, agricultural economists recall, European cattle were reduced about 8% through four years of war, Belgium being the land worst hit in this respect, with loss of one-third of its cattle.

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A trend toward lighter weight *bottles* is noted in the glass industry.

HISTORY

Ancient Blitzkriegers Always Left Their Victims to Starve

IF NAZIS want to steal food from invaded neutrals and other trampled countries, leaving masses of people to grapple with hunger, they can find plenty of precedent from darkest chapters of human history.

Standard technique of conquerors in ancient times was to thoroughly pillage a land, said Dr. Waldo H. Dubberstein of the Oriental Institute of the University of Chicago, in response to a Science Service inquiry. A conqueror, he added, would then leave those inhabitants fortunate enough to escape with their lives, and not enslaved, to shift for themselves until the next harvest.

As recently reported, one Nazi commentator asked derisively: "Now, who in the world ever expected a victor to provide his enemies or former enemies with food?" This echoes prevailing sentiments of Assyrian and other ancient blitzkriegers, hundreds of whose exploits bear out this viewpoint.

"I believe it may be generally assumed that ancient peoples and conquering nations never recognized a responsibility of providing even a minimum of food for conquered nations," Dr. Dubberstein finds.

Typical of kings engaged in imperial conquest 3,000 years ago is this boast of Assyrian Tiglath-Peleser I:

"I conquered the land of Kutmuhi in its length and breadth. Their booty, their goods, and their possessions I brought out. I burned their cities with fire, I devastated, I destroyed."

Assyrian King Assurnasirpal of the ninth century B. C. similarly went on record as to his tactics, adding:

"All the men who had fled from before my arms came down and embraced my feet, and I imposed enforced labor on them."

Egyptian records of conquest show the same disregard for the immediate or more remote future of conquered nations, says Dr. Dubberstein. Egypt's greatest militarist monarch, Thutmose III, in the fifteenth century B. C. even ordered the fields of the fertile Megid-

do plain—traditional Armageddon in Palestine—to be harvested for the benefit of his troops.

Likewise true to form with ancient blitzkriegers, runs the oft-reported Nazi concern for their own people. Many ancient rulers, says Dr. Dubberstein, insisted that they were deeply concerned about general economic welfare of peoples of their country, and particularly the poorer groups.

Science News Letter, August 24, 1940

INVENTIONS

Air Electricity Warns Planes When Approaching Mountains

Other Inventions of Week Include Improvement In Automatic Rifle Mechanism, by Browning

ELECTRICAL differences in the atmosphere will, even in a fog, warn air pilots of their approach to a mountain, if the invention of Dr. Ross Gunn, physicist of the U. S. Naval Research Laboratory in Washington, D. C., is put into use. The Patent Office has just granted him U. S. Patent No. 2,210,932 for the discovery.

"It is well known," says Dr. Gunn in the specifications accompanying the patent, "that the earth's surface normally carries a negative electrical charge and that an electrical current constantly flows toward the earth. This current sets up a potential difference of such a magnitude that near the surface of the earth two points separated vertically by about a meter are at a difference of potential of approximately 150 volts."

Because of the uniformity of this effect, there are surfaces in the air, parallel to the ground, along which the voltage is the same. These are called "equipotential surfaces." They curve up and over a mountain, or other rise in the ground.

In his apparatus, Dr. Gunn makes use of instruments for measuring this voltage. One detector is placed at the front of the plane, the other at the tail. As long as the aircraft is flying along one of these surfaces, there is no difference between them. If, on the other hand, it passes over a rise in the ground, the equi-potential surface slopes upward, and the forward detector being nearer the ground, indicates a lower voltage than the rear. Even over level ground, says Dr. Gunn, the method can be used to tell whether the plane is flying on a level or not.

To Jonathan E. Browning, of Ogden, Utah, inventor of the Browning machine gun, went patent 2,211,405, for an improvement on an automatic rifle which is operated by the expansion of gases from the explosion. Usually, in such automatic firearms, the gases, after the bullet has passed, are admitted to a cylinder below the barrel, where they push back a piston that operates the breech, ejecting the used cartridge and inserting a new one. In the new gun, however, the piston consists of a tube in a chamber surrounding the barrel. This scheme, it is claimed, prevents any cramping or binding of the piston, which would jam the gun. Mr Browning has assigned the rights for his patent to the Western Cartridge Company.

Invisible contact eyeglasses, which are worn under the eyelid, are covered in a patent (2,211,086) issued by Edgar D. Tillyer, of the American Optical Company, Southbridge, Mass. Such lenses have been extensively used in the past, but their close contact with the eyeball prevents the tear solution from circulating properly, and also interferes with the circulation of blood in the outer part of the eye. As improved by Mr. Tillyer, the part of the lens that is in contact with the eyeball is not perfectly smooth, but pebbled, like an orange peel. The roughness is not enough to be felt, but, he says, it does permit the blood to circulate and the tear solution to flow freely, and prevents discomfort and possible injury to the eye.

Two German inventors, Paul Kotowski and Kurt Dannehl, both of Berlin, received patent 2,211,132 for a system of transmitting secret messages by radiotelephone. This superimposes on the voice an extraneous noise, generated by a rotating disk, marked with a sawtoothed pattern. Light passes through this, as it does through a sound movie film, and, in the same way, is converted by an electric eye into a changing electrical current which is fed into the radio transmitter.

Thus, to anvone listening with an ordinary set, the noise completely drowns out the message. The deciphering equipment makes use of a disk identical with the first one, which moves in synchronism with it. This is fed into the receiver in such a way that it exactly counteracts the noise, and the message can be clearly heard. The Telefunken Radio Telegraph Company, of Germany, has been assigned the rights to the invention.

A new kind of photographic film is covered by patent 2,211,323, granted to Charles R. Fordyce, of Rochester, N. Y. Instead of gelatin, usual material for the emulsion which holds the light-sensitive silver bromide, this uses a synthetic resin of the vinyl acetate type, which is soluble in cold water, but not in warm. Thus, it can be applied when near freezing. When the film is developed, in solutions at room temperature, it is unaffected.

Two other patents for photographic films, which, like the one to Mr. Fordyce, were assigned to the Eastman Kodak Company, were granted Gale F. Nadeau and Alfred D. Slack, also of Rochester. These were numbers 2,211,346 and 2,211,347. A common photographic trouble is halation, in which the back of the film reflects light to the front again, and the picture is blurred. This is prevented by covering the back of the film with a layer of a dye or some material that absorbs the light, but it must be removed in the processing. To hasten the removal of the coating, these patents call for the use of certain chemicals in the coating that increase the "wettability" of the material. Then the water of the developing solution is very quickly brought into contact with the dye and its removal is hastened.

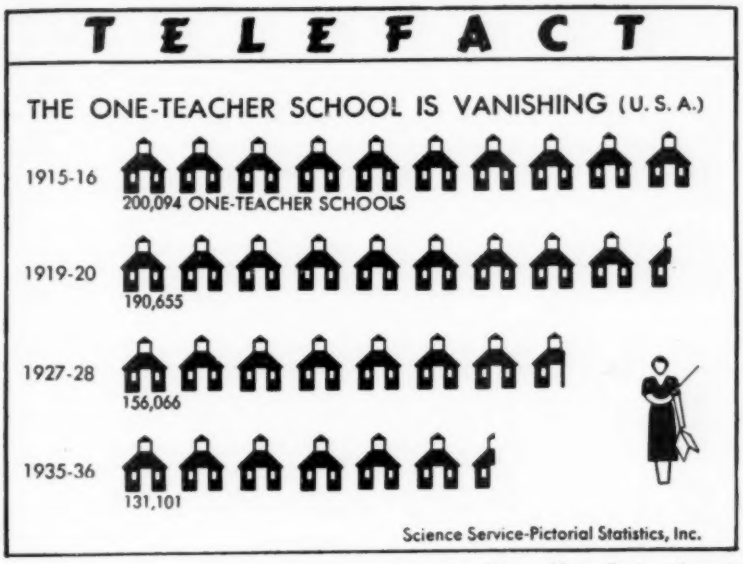
Science News Letter, August 24, 1940

Boys who *quit school* early almost invariably wish they had not, according to a ten-year study of a Pennsylvania educator.

RADIO

Dr. Cassius Way, president of the American Veterinary Medical Association, will tell about "Keeping Animals Well," as guest speaker on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, Aug. 29, 4:00 p.m., EDST, 3:00 EST, 2:00 CST, 1:00 MST, 12:00 PST.

Listen in on your local station. Listen in each Thursday.



Science News Letter, August 24, 1940

EDUCATION

Training in Reading Urged for High Schools

HIGH SCHOOL students will add reading — yes, reading! — to their studies, if advice of ten noted educators who have been probing weak spots in American education is followed. Producing competent readers would be a major achievement in educating young Americans, they conclude.

Recommending "radical changes at many points" in high school education in this country, their report to the American Youth Commission of the American Council on Education discloses that many high school pupils read no better than fourth or fifth grade children, and strongly criticizes present methods of teaching young America to read.

Errors in teaching reading, cited in the report, include:

Cramming facts into textbooks so thickly that the pupil cultivates the habit of plodding through pages, and has little chance of acquiring ease and fluency in reading.

"Pupils," says the report, "begin to think that it requires from three to six months to read through a book."

Minute dissection of what the pupil has read, by questioning teachers, develops the student habit of rambling thought. The young reader who takes up a book becomes used to speculating as to all possible questions that might be raised.

Declaring that "reading is not a simple skill; it is a complex of many skills," the ten educators urge "years of practice in the higher forms of reading." It has been a mistake on the part of educators, they report, to assume that pupils past elementary grades need no more reading lessons.

Among reading lessons and habits which high schools may teach, if the committee's recommendations meet with favor, are:

1. How to look through a book of reference for a single desired fact.

2. How to be critical of the testimony presented by a biased writer.

3. What to do when a statement, important but not fully understood, must be supplemented by further reading.

Science News Letter, August 24, 1940

SOCIOLOGY

Schoolma'ams' Marriages Statistically Analyzed

PROSPECTS of women schoolteachers getting married have been reduced to cold statistics by Harold H. Punke, sociologist of Georgia State Women's College.

While the marriage rate for schoolma'ams is highest at 22 to 24 years, as it is for other native white American women with whom he compared them, schoolteachers in their twenties who must resign to marry have a marriage rate only one-half to five-eighths as great as non-teaching contemporaries, he states (*American Sociological Review*, August).

Beyond 40 years of age, however, schoolteachers marry at a greater rate than women of that age in general, he finds.

Mr. Punke's study was made in a southern city of over 300,000, in which women teachers until very recently were not permitted to teach after marriage.

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PHYSIOLOGY

Synthetic Hormones Cause Changes in Sex of Fish

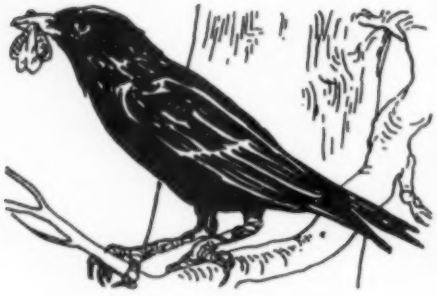
SEX reversal in fish, changing females into males, has been accomplished by injecting synthetic male sex hormone, in experiments performed by Drs. F. M. Baldwin and H. S. Goldin of the University of Southern California.

The fish used were young female swordtails. The males of this species have a long point spine projecting backwards from the tail, which gives the fish its name. The female normally lacks this spine, but injection of the male hormone caused the ones under experiment to grow it, as well as to develop internal changes in the reproductive glands characteristic of the male.

Science News Letter, August 24, 1940

ORNITHOLOGY

NATURE RAMBLINGS
by Frank Thone



Model Parents

STARLINGS may be unmitigated pests from the human point of view, but they are model parents to their own families, reports Dr. H. A. Allard of the U. S. Department of Agriculture. This solicitude and efficiency in the care of their young is probably one of the main factors in the success of these invader birds in establishing themselves solidly in this country.

Dr. Allard obtained intimate insight into the domestic life of a starling family by providing a desirable nesting box in the attic of his barn. The top of the box consisted of a pane of glass, which permitted him to watch the nest closely without himself being seen.

Papa Starling was no shirker. He took turns with his mate in incubating the eggs and in brooding the young after they were hatched. When not on duty at the nest he was out foraging. First meals for the hungry young were small caterpillars and spiders, slightly crushed and gently tucked into the tiny gaping mouths. Later, provisions were brought in larger lots and poked in with rather strenuous vigor.

Despite their reputation as dirty birds, starlings take great care to prevent the nest from becoming fouled, Dr. Allard found. They are forever removing wastes, loosening the lining for aeration, adding new lining materials.

Unlike many other small birds, starlings do not set up definitely bounded hunting grounds and fight off all intruders. They remain gregarious in their foraging. However, they are decided individualists with highly developed property sense when it comes to nesting sites. The same birds will return to a nesting box they have occupied before, and bitter fights often result from attempts at claim-jumping.

Science News Letter, August 24, 1940

CLIMATOLOGY

Hottest Known Place Is Death Valley, California

HOTTEST day ever recorded on earth was chalked up at the town with the sizzling name of Azizia in Lybia, where Mussolini's legions are now slogging their weary way through the sands to attack Egypt. Azizia's pride is a temperature of 136 degrees Fahrenheit—and very little shade.

However, that does not make Azizia the hottest place on earth, declares Dr. W. Gorczynski, eminent Polish meteorologist now working at the Scripps Institution of Oceanography. A single super-heated day does not constitute a simmering summer in Hades. Until Azizia can produce long-continued records of heat (and weather records there are fragmentary) the somewhat wilted palm for highest thermal honors must go to America's own Death Valley, in California.

Records kept continuously for the past 20 years at Greenland Ranch in Death Valley show average maxima of 94 degrees for June, 102 degrees for July and 98.9 degrees for August. Highest temperature ever recorded is 134 degrees—a close second to Azizia's lone peak of 136 degrees.

Second-hottest place, according to Dr. Gorczynski, is the oasis of In-Salah, deep in the French Sahara, where records for ten years show average maxima of 90.3 degrees in June, 99.3 degrees in July, and 97 degrees in August, with highest single record at 133 degrees. Jacobabad, in the desert of Upper India, has maxima for the three summer months of 97.7, 95 and 91.6 degrees respectively, but the highest single record was a mere 120 degrees.

Bagdad in Iraq is hard pushed for its place in the sun by its namesake, Bagdad, Calif. The Arab city shades (if that's the right word) the California town's June maxima by just 1.2 degrees: 90 flat as against 88.8. California forges two-tenths of a degree ahead in July, with 94.6 against 94.4. But the original Bagdad of the Kalifs pulls ahead in August, with averages of 94.4 as compared with 92.5. All-time honors in the contest also go to Bagdad, Iraq, with 123 degrees, over only 119 degrees achieved by Bagdad, Calif.

However, although Death Valley is thus the hottest spot on the planet so far as is definitely known, it is not the driest. Even Bagdad, Calif., as well as other places in Imperial Valley, are drier than Greenland ranch, Dr. Gorczynski states. Much drier are parts of the Sahara and the Egyptian Sudan, as well as the desert of Arabia.

Science News Letter, August 24, 1940

Roughening concrete pavement with hydrochloric acid to increase *skid-resistance* has been tried in England.

•First Glances at New Books

Additional Reviews On Page 128

PSYCHOLOGY

AS THE TWIG IS BENT—Leslie B. Hohman—*Macmillan,* 291 p., $2.50. Modern advice to parents on the education of children. Dr. Adolf Meyer in the foreword says: "Dr. Hohman's book is throughout an exposé of what is intelligent in terms of actual life, free of cultism, and encouraging those who have to bear the real burden of the situation, to aim at training and well-guided common sense, open and sound and practically inquiring, neither too dogmatic nor a mere *laissez faire.*

Science News Letter, August 24, 1940

PSYCHOLOGY

THE RELATION OF MUSCULAR ACTION POTENTIALS TO IMAGINAL WEIGHT LIFTING — William A. Shaw — *Archives of Psychology, Columbia Univ.,* 60 p., $1. (See page 121)

Science News Letter, August 24, 1940

BIOLOGY

BIOLOGY IN THE MAKING—Emily Eveleth Snyder—*McGraw-Hill,* 539 p., illus., $2.80. The story of biology—the discoveries in the field from microbes to vitamins, the way they were made and the men who made them—is told in simple, easy-to-read style.

Science News Letter, August 24, 1940

HORTICULTURE

TREE NEIGHBORS—Russell Doubleday —*Doubleday, Doran,* 103 p., illus., $1.75. Thirty-two of the better known kinds of trees that people like to plant alongside their houses or in city parks, simply described and well illustrated.

Science News Letter, August 24, 1940

ZOOLOGY

A CONTRIBUTION TO THE ECOLOGY AND FAUNAL RELATIONSHIPS OF MAMMALS OF THE DAVIS MOUNTAIN REGION, SOUTHWESTERN TEXAS—W. Frank Blair —*Univ. of Mich. Press,* 39 p., illus., 35c.

Science News Letter, August 24, 1940

ARCHAEOLOGY

THE ARCHAEOLOGICAL SURVEY OF THE HIGH WESTERN PLAINS, 12th Report. Further Research Work in the Black's Fork Basin, Southwest Wyoming, 1938-1939—E. B. Renaud—*University of Denver,* 93 p., 3 pl., 75c. (See page 120.)

Science News Letter, August 24, 1940

MICROBIOLOGY

APPLIED MYCOLOGY AND BACTERIOLOGY —L. D. Galloway and R. Burgess—*Chem. Pub. Co.,* 186 p., $4. A simple but adequate presentation of the essentials of microbiology, intended particularly for those who will make use of them in agriculture, the industries or public hygiene. Of British origin, the book is nevertheless applicable in most respects to conditions in the United States and Canada.

Science News Letter, August 24, 1940

NUTRITION

FOOD CONTROL, Its Public-Health Aspects—James Houston Shrader—*Wiley,* 513 p., $4. This book should be extremely useful to the "regulatory officers, food technologists and students of the food industry" for whom it was written, but it is not too technical to be read with interest and profit by the layman with an elementary knowledge of chemistry and bacteriology.

Science News Letter, August 24, 1940

CHEMISTRY

QUANTITATIVE ANALYSIS (2d ed.)— Willis Conway Pierce and Edward Lauth Haenisch—*Wiley,* 462 p., $3. The first edition of this text having appeared in 1937, and tested in actual use, the authors have been able to make certain changes which have proven desirable, though the general content and arrangement of the first edition have been preserved.

Science News Letter, August 24, 1940

CHEMISTRY

CHEMICAL INDUSTRIES—D. M. Newitt, ed.—*Chemical Pub. Co.,* 443 p., $4. A well-arranged British book, giving data and information useful in various branches of chemical industry. Advertisements of equipment (of course British) are conveniently given at the end of each chapter.

Science News Letter, August 24, 1940

CHEMISTRY—EDUCATION

VISUAL AIDS IN THE REALM OF CHEMISTRY—Comp. under the direction of Rufus D. Reed, from material collected by Lili Heimers and others—*Visual Aids Service, New Jersey State Teachers College,* 11 mimeographed leaves, 25c.

Science News Letter, August 24, 1940

GEOGRAPHY—HISTORY

GUATEMALA, ANCIENT AND MODERN— Joaquin Munoz and Anna Bell Ward —*Pyramid Press,* 318 p., illus., $2.50. A useful book for the tourist, containing travel information and history. Illustrations are well-chosen, and the useful features tend to offset the fact that it is, in spots, poorly edited.

Science News Letter, August 24, 1940

PHYSIOLOGY

THE VARIETIES OF HUMAN PHYSIQUE, An Introduction to Constitutional Psychology—W. H. Sheldon, S. S. Stevens and W. B. Tucker—*Harper,* 347 p., illus., $4.50. This book gives medical scientists the authors' views on the relation of the psychological aspects of human behavior to body type, and also shows how to study this subject, called constitutional psychology

Science News Letter, August 24, 1940

BIOCHEMISTRY

TEXTBOOK OF BIOCHEMISTRY (2d. ed.) —Benjamin Harrow—*Saunders,* 439 p., illus., $3.75. Much new material has been added to this edition, including sections on sulfanilamide and derivatives, the new vitamins, and the use of the nitrogen isotope in the study of protein metabolism.

Science News Letter, August 24, 1940

CHEMISTRY

AN INTRODUCTION TO ORGANIC CHEMISTRY (5th ed.)—Alexander Lowy and Benjamin Harrow—*Wiley,* 400 p., illus., $3. When a text book reaches the fifth edition, we have excellent proof of its value. In the case of this work, a new edition has appeared regularly every four years, enabling the authors to keep it abreast of new developments.

Science News Letter, August 24, 1940

CHEMISTRY

LABORATORY MANUAL to accompany FUNDAMENTALS OF CHEMISTRY AND APPLICATIONS—Charlotte A. Francis and Edna C. Morse—*Macmillan,* 152 p., unbound, punched for ring binder, $1. Being in the form of separate sheets, the experiments in this course can easily be selected according to the desires of the instructor. The authors have indicated some experiments that should be used in a course of less than 60 hours, and alternative ones for a longer course.

Science News Letter, August 24, 1940

BOTANY

STUDIES OF AMERICAN PLANTS—X— Paul C. Standley — *Field Museum of Natural History,* 64 p., 50c.

Science News Letter, August 24, 1940

ORNITHOLOGY

STRUCTURAL ADAPTATIONS IN THRASHERS (MIMIDAE: GENUS TOXOSTOMA) WITH COMMENTS ON INTERSPECIFIC RELATIONSHIPS — William L. Engels — *Univ. of Calif.,* 59 p., illus., 75c.

Science News Letter, August 24, 1940

•First Glances at New Books

Additional Reviews On Page 127

MEDICAL HISTORY

LEE ON THE LEVEE—Ralph Cannon—*Saravan House,* 188 p., $2.50. Probably few physicians and still fewer laymen know of the friendship between General Robert E. Lee and Dr. William Beaumont, famed for his studies of digestion made on the Canadian half-breed, Alexis St. Martin, who had a permanent opening into his stomach as a result of a wound that failed to heal. The Lee and Beaumont families lived together in the Governor William Clark mansion on the St. Louis waterfront from May, 1838 to May, 1839. An unpublished collection of letters from the Lee family to the Beaumonts, written just after that period, form the basis for this historical novel.

Science News Letter, August 24, 1940

MEDICINE

DOCTORS IN SHIRT SLEEVES—Sir Henry Bashford, ed.—*Veritas Press,* 294 p., $2.50. These "Musings on Hobbies, Meals, Patients, Sport and Philosophy" were originally published in *The Lancet,* well-known British medical journal. Some of the chapters will be enjoyed only by medical people, but there are many which will be enjoyed by the intelligent lay reader. The one entitled "Some Thoughts on Meals" is particularly to be recommended to those who take their diet too seriously.

Science News Letter, August 24, 1940

MEDICINE

RHEUMATIC FEVER; Studies of the Epidemiology, Manifestations, Diagnosis, and Treatment of the Disease During the First Three Decades—May G. Wilson—*Commonwealth Fund,* 595 p., tables, $4.50. A comprehensive presentation of all phases of the subject by a physician who has spent more than 20 years on its study. Too technical for lay readers, of course.

Science News Letter, August 24, 1940

MEDICINE

SILICOSIS, Proceedings of the International Conference held in Geneva from 29 August to 9 September 1938—*International Labour Office,* 223 p., $1.25.

Science News Letter, August 24, 1940

MEDICINE

GOOD HEALTH AND BAD MEDICINE—Harold Aaron—*McBride,* 328 p., $3. The medical consultant to Consumers Union has written a family medical guide for those "who need to know the modern rules of good health and the causes of their common ailments, from headaches to arthritis to tooth decay . . . who need to know when it is safe to take a home remedy and when it is necessary to get immediate advice from a doctor."

Science News Letter, August 24, 1940

MEDICINE

HANDBOOK OF HEARING AIDS—A. F. Niemoeller—*Harvest House,* 155 p., $3. This book explains the various types of hearing aids, how they work, what can be expected of them, and how to care for them, and gives some valuable tips on their selection.

Science News Letter, August 24, 1940

MEDICINE

COMPLETE GUIDE FOR THE DEAFENED — A. F. Niemoeller — *Harvest House,* 256 p., $3. A simple, clear and comprehensive book that gives much information on deafness and much practical advice for the deafened or hard of hearing. Subjects range from protection of the ears in swimming to how to hear conversation.

Science News Letter, August 24, 1940

MEDICINE

IT IS YOUR LIFE—M. M. Rosenberg—*Scholastic Book Press,* 450 p., $2.50. A New York doctor writes about health.

Science News Letter, August 24, 1940

BIOGRAPHY—MEDICINE

BERKELEY MOYNIHAN, SURGEON—Donald Bateman—*Macmillan,* 354 p., illus., $4. Both interesting and inspiring is this biography of "the most famous English surgeon of his day."

Science News Letter, August 24, 1940

MEDICINE—HYGIENE

GETTING READY TO BE A MOTHER (Rev. ed.)—Carolyn C. Van Blarcom—*Macmillan,* 190 p., illus., $2.50. Latest edition of a sound, practical and helpful book for prospective parents.

Science News Letter, August 24, 1940

MEDICINE

A MANUAL FOR DIABETIC PATIENTS—W. D. Sansum, Alfred E. Koehler and Ruth Bowden—*Macmillan,* 227 p., $3.25.

Science News Letter, August 24, 1940

ZOOLOGY

VARIATIONS AND RELATIONSHIPS IN THE SNAKES OF THE GENUS PITUOPHIS—Olive Griffith Stull—*Govt. Print. Off.,* 225 p., illus., 35c. (U. S. National Museum, Bull. 175).

Science News Letter, August 24, 1940

ECONOMICS

THE ECONOMIC ALMANAC FOR 1940—Conference Board—*National Industrial Conference Board,* 384 p., $5. First appearance of a handbook of useful facts about business, labor and government. Chronologies on business and political events, and events affecting labor relations extend through May 1940, while a calendar lists dates for 1940-41. Other parts cover economic legislation, general business conditions, economic developments.

Science News Letter, August 24, 1940

ECONOMICS

THE FEDERAL FINANCIAL SYSTEM—Daniel T. Selko—*Brookings Inst.,* 606 p., $3.50. Budget-making, revenue administration, treasury management, and accounting are important in getting dollars in and out of the Federal treasury. This is a technical study with particular reference to four problems facing the government: helping Congress act intelligently on the national budget, eliminating politics from revenue administration, simplifying and improving the treasury system, and controlling the Federal purse.

Science News Letter, August 24, 1940

LIBRARY SCIENCE

BANKING AND FINANCIAL SUBJECT HEADINGS for Bank Libraries and Financial Information Files—Comp. by a Committee of the Financial Group.—*Special Libraries Assn.,* 98 p., $4.; To members, $3.

Science News Letter, August 24, 1940

MINERALOGY

FIELD IDENTIFICATION OF MINERALS FOR OREGON PROSPECTORS AND COLLECTORS—Ray C. Treasher, comp.—*Department of Geology and Mineral Industries, 702 Woodlark Building, Portland, Oregon.* (Bulletin No. 16), 128 p., 50c.

Science News Letter, August 24, 1940

MEDICINE

DISEASES OF THE DIGESTIVE SYSTEM; a Text-book for Students and Practitioners—Eugene Rosenthal—*Mosby,* 394 p., illus., $8.50. Unusual diagrams and drawings designed to aid the medical student's memory of what he learns are a special feature of this text book.

Science News Letter, August 24 1940

PUBLIC HEALTH

HEALTH IN HANDCUFFS — John A. Kingsbury—*Modern Age Bks.,* 210 p., 75c.

Science News Letter, August 24, 1940